

Local Density of States Around Magnetic Impurity in Cuprate Superconductors(LT26)

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The local density of states (LDOS) around a magnetic impurity in the doped superconductors at $T = 0$ is studied within the two-dimensional $t - J - U$ model. The order parameters are determined in a self-consistent way with the Gutzwiller projected mean-field approximation and the Bogoliubov-de Gennes theory¹. We find that the LDOS shows the typical "V" shape asymmetric curve where is far away from the impurity. A peak is induced around the impurity, but it lies far away from the Fermi energy, which is quite different from the nonmagnetic impurity case. At the same time, we find that the magnetic impurity has little effect on the superconducting gap. The obtained results are qualitatively consistent with experiments.²

¹F. C. Zhang, Phys. Rev. Lett. **90**, 207002(2003); M. C. Gutzwiller, Phys. Rev. Lett. **10**, 159(1963).

²A. Yazdani et al., Phys. Rev. Lett. **83**, 176(1999); S. H. Pan et al., Nature (London) **403**, 746 (2000).